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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,921	01/24/2002	Michael Turner	60556-303420	8250
22434	7590	08/06/2004	EXAMINER	
BEYER WEAVER & THOMAS LLP P.O. BOX 778 BERKELEY, CA 94704-0778			HIRL, JOSEPH P	
			ART UNIT	PAPER NUMBER
			2121	

DATE MAILED: 08/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/913,921		TURNER ET AL.	
	Examiner		Art Unit	
	Joseph P. Hirl		2121	

③

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-8 and 11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to an AMENDMENT entered May 6, 2004 for the patent application 09/913,921 filed on January 24, 2002.
2. The First Office Action of October 31, 2003 is fully incorporated into this Final Office Action by reference.

Status of Claims

3. Claims 2, 9 and 10 are cancelled. Claims 1, 3 and 7 are amended. Claim 11 is new. Claims 1, 3-8 and 11 are pending.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Smyth (USP 5,465,321, referred to as **Smyth**).

Claims 1, 7, 11

Smyth anticipates (i) providing a data representation for each item in the data set (**Smyth**, c 15, l 57-59); (ii) providing a query representation of the query item (**Smyth**, c 15, l 61-63); (iii) defining a transformation space (**Smyth**, c 15, l 26-33; c 15, l 57-59); (iv) for each of a number of regions spanning the entire transformation space, determining an upper bound to the probability of a global match between the query representation and a data representation under any global transformation in, the region (**Smyth**, c 15, l 4-67; c 16, l 1; Examiner's Note (EN): the conditions of w_1 and w_2 form the universe); (v) automatically determining a global threshold probability based on the upper bound in (iv) (**Smyth**, c 15, l 31-67; c 16, l 1-12); (vi) comparing the upper probability bound of each region with the global threshold probability (**Smyth**, c 15, l 43-46); and (vii) determining regions having an upper probability bound greater than the global threshold probability, so as to identify solution regions (**Smyth**, c 16, l 13-15); (viii) sub-dividing, the solution regions into further region which span the solution regions (**Smyth**, c 14, l 51-53; c 15, l 26-33: EN: use of prior knowledge will accommodate refinement or subdivision) (ix) determining a new upper bound to the probability of a global match between the query representation and a data representation under any global transformation in the further regions (**Smyth**, c 15, l 4-67; c 16, l 1; EN: the conditions of $w_1, w_2, w_3 \dots w_{m-1}$ form the universe); (x) determining a new global threshold probability based on the new upper bound (**Smyth**, c 15, l 31-67; c 16, l 1-12); and (xi) determining new solution regions (**Smyth**, c 16, l 13-15; EN: input data is a time series which facilitates the constant or iterative calculation).

Claim 3

Smyth anticipates the step of iterating the further method steps of claim 1 so as to identify the solution region containing the best matching solution or to identify a set of solution regions containing a set of best matching solutions (**Smyth**, c 15, l 57-67; c 16, l 1-15; EN: input data is a time series which facilitates the constant or iterative calculation to the best or most current solution).

Claims 4, 5

Smyth anticipates data representations are topological representations of the data items and the query representation is a topological representation of the query item (**Smyth**, c 15, l 57-67; c 16, l 1-15; EN: Para 2 above applies; topological data or group has the features of an abstract group in which the group operations are continuous; the data input is time series or continuous and the variables are abstract representations of the related limits of operation).

Claim 5

Smyth anticipates topological representation of the data items and query item comprises a set of node measurement vectors, each node measurement vector being associated with a node of a topological arrangement of nodes defining the items (**Smyth**, c 15, l 57-67; c 16, l 1-15; EN: Para 2 above applies; topological data or group has the features of an abstract group in which the group operations are continuous; the data input is time series or continuous and the variables are abstract representations of the related limits of operation; values for W_i are numerical operational values that represent vectors; the vectors are the nodes that define the items or data).

Claim 6

Smyth anticipates which the upper bound is determined using Bayesian probability theory (**Smyth**, c 15, l 13-25). The abstract of the disclosure does not commence on a separate sheet in accordance with 37 CFR 1.52(b)(4).

Claim 8

Smyth anticipates a computer program which when running on a computer carries out a method as claimed in claim 1 (**Smyth**, c 37, Claim 25; Para 2 applies; to one of ordinary skill in the art, the apparatus of Claim 25 is synonymous with computer and the "means for" cited therein provides computer features and software).

Response to Arguments

5. The objection to the drawings is withdrawn.
6. The objection to the specification remains. A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.
7. Applicant's arguments filed on May 6, 2004 related to Claims 1, 3-8 and 11 have been fully considered but are not persuasive.

In reference to Applicant's argument:

The method described in Smyth is a gradient descent method of identifying local minima solutions in time-series databased upon hidden Markov models. In contrast the invention defined by the amended claims is an iterative method for eliminating groups or regions of solutions based upon an upper bound global probability. Further, the claimed invention uses an elimination procedure based upon an adaptive global threshold, which is determined automatically from the current upper bound (see step (iv)). In contrast,

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Smyth merely uses a local threshold determined by pre-defined models. In the current invention the upper bound converges to the true probability of the solutions over time.

Examiner's response:

Para 10 below applies. The applicant's Bayesian approach to item 110 of Fig. 1a is local to the condition of the related regions of item 100. The applicant's specification at page 15, p 0041 identifies "some known lower bound value, "L", ..." but there is no disclosure as to how "L" is determined, if it can be determined. Consequently, the concept of a lower bound threshold "L" is not enabled by the specification. An arbitrary threshold renders the applicant's concept indeterminate... The "adaptive global threshold" is local to the region and iterative only on a sub region basis. To such a concept, Smyth applies per the first office action. Iteration is identified in Smyth's steps 5 and 6 at c16, l 2-15. Automatic determination of the upper bound threshold as described in steps (iv) and (v) of claim 1 will insure that a local region will be selected since all regions save one will be below the arbitrary global threshold. Applicant's model as defined in claim 1 is pre-defined. Based on claim 1, the upper bound is stagnant to the maximum local probability.

In reference to Applicant's argument:

As the Smyth method finds the best local match only, it is possible that the Smyth method will eliminate the actual global match (i.e. the actual best solution), if the Smyth method gets trapped in a local minimum. In contrast as the regions span the entire transformation space and determine an upper bound of a global match between the query and data representation under any global transformation (see step (iv)), the entire transformation space is covered by the present invention and so that precludes missing the actual global match.

Examiner's response:

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Para 10 below applies. Smyth's search covers the spectrum of the fault domain identified as w_2 established in assumption of A2 at Smyth, C 15, I 4. A density function is established related to the observed parameters.

In reference to Applicant's argument:

In Smyth, their thresholds are determined by local modeling. Smyth does not disclose or suggest using upper bound thresholds on the global match.

Examiner's response:

Smyth at c 15, I 67 establishes upper and lower bounds related to the specific parameters that define the spectrum (global) faults.

In reference to Applicant's argument:

Furthermore, the present invention uses an adaptive threshold. That is the threshold probability is determined in step (v) based upon the upper bound which has previously been determined in step (iv). In Smyth, no adaptive threshold is used, rather their threshold is determined by pre-defined models rather than changing adaptively during iterations of the method.

Examiner's response:

Para 10 below applies. The concept of claim 1 as demonstrated by Figs. 1, illustrates how sub optimal region "D" would be selected albeit region "B" is the best solution. Iteration is adaptation and Smyth identifies such operation at c16 I 2-15.

In reference to Applicant's argument:

The method of Smyth is a gradient descent method: i.e. merely looking for the local lowest minimum. The invention uses a method based on eliminating regions of solution space so as to identify solution regions (see step (vii)) and then iteratively applying the method to those solution regions to identify further solution regions (see steps (ix) to (xi)).

Examiner's response:

Smyth's process performs iteration at c16, l 2-15. The applicant's elimination of regions is based on a threshold whose determination has not been analytically disclosed and therefore the consequences of the applicant's approach are indefinite.

In reference to Applicant's argument:

Therefore the method of Smyth does not include a number of the elements of the amended claims. Further, the method of Smyth is based on a fundamentally different approach (local minima versus global) and it is respectfully submitted that it would not be obvious how to adapt the method of Smyth so as to arrive at the present invention. Further, Smyth does not and cannot provide a number of the advantages of the present invention, such as guaranteeing that the actual global solution is identified.

Examiner's response:

Para 10 below applies. The prior office action addressed all claims and sub claims using the prior art of Smyth. The Smyth estimate of class probabilities provides spectrum coverage. The main issue related to the applicant centers around the lack of details concerning the determination of the Fig. 1A threshold probability, item 120. The term "global threshold probability" is not identified in the application.

Examination Considerations

8. The claims and only the claims form the metes and bounds of the invention. "Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in

the claim are not read into the claim. *In re Prater*, 415 F.2d, 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, I 45-48; p 2100-9, c 1, I 1-4). The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

9. Examiner's Notes are provided to assist the applicant to better understand the nature of the prior art, application of such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office actions. Such comments are entirely consistent with the intent and spirit of compact prosecution. However, and unless otherwise stated, the Examiner's Notes are not prior art but a link to prior art that one of ordinary skill in the art would find inherently appropriate.

10. Examiner's Opinion

Paras 8 and 9 apply. The Examiner has full latitude to interpret each claim in the broadest reasonable sense. An important feature, the value of "L" (specification, page 15, I 5) is not disclosed such that "L" can be determined analytically. The methodology of claim 1 and the example of Fig. 1 illustrates sub optimality.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

12. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Claims 1, 3-8 and 11 are rejected.

Correspondence Information

Any inquiry concerning this information or related to the subject disclosure should be directed to the Examiner, Joseph P. Hirl, whose telephone number is (703) 305-1668. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Anthony Knight can be reached at (703) 308-3179. Any response to this office action should be mailed to:

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Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

or faxed to:

(703) 746-7239 (for formal communications intended for entry);


or faxed to:

(703) 746-7290 (for informal or draft communications with notation of
"Proposed" or "Draft" for the desk of the Examiner).



Joseph P. Hirl

August 3, 2004


RAMESH PATEL
PRIMARY EXAMINER 8/4/04
For Anthony Knight